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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,889	09/19/2003	Daniel J. Gregoire	HRL025-DIV	6992

28848 7590 07/27/2005  
TOPE-MCKAY & ASSOCIATES  
23852 PACIFIC COAST HIGHWAY #311  
MALIBU, CA 90265

EXAMINER
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BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/665,889

Applicant(s)

GREGOIRE ET AL.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claim 1 stands rejected under 35 U.S.C. 102(b) as being anticipated by Tanjyo et al (US Patent No. 5,189,303).**

Tanjyo et al teach an ion source (Fig. 1) capable of being used for polishing diamond surfaces by generating atomic oxygen ions in plasma form, the ion source comprising:

a plasma generating chamber 6; magnets 9 and 10 arranged around the chamber 6; a filament 7 which is heated by a filament power source 16 wherein the electric discharge can be a glow discharge (AC); a gas port 8; a bias DC power source 17; and an array of magnets 40 disposed in an extraction plate 2 arranged at the exit of the chamber (column 5, line 4 through column 6, line 30, and column 10, line 50 through column 11, line 20).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 2, 7, 8, 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjyo et al (US Patent No. 5,189,303) in view of Leung et al (US Patent No. 5,198,677).**

Tanjyo et al teach all limitations of the claims as discussed above except for the filament is formed of tungsten; and a cooling jacket for cooling the magnets arranged around the chamber; and a cylindrical molybdenum shield.

Leung et al teach an ion source (Fig. 1) including a filament 57 made of tungsten; a cooling channel formed between a plasma generation chamber 12 and a cylindrical wall 14 for cooling magnets 13 in the channel; and a liner 45 made of a high-temperature resistant material such as molybdenum provided within the chamber (column 3, line 10 through column 4, line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the filament material, the magnet cooling mechanism and the liner as taught by Leung et al in the apparatus of Tanjyo et al as a suitable material for filament, cooling the magnets and protecting the inner surface of the chamber from plasma attack, respectively.

**Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjyo et al (US Patent No. 5,189,303) in view of Anderson et al (US Patent No. 5,365,070).**

Tanjyo et al teach all limitations of the claims as discussed above except for the chamber is formed of low carbon steel.

Anderson et al teach an ion source 10 (Fig. 1) including a magnetic holding metal member 12 made of carbon steel which has high magnetic permeability so that magnetic field can easily penetrate there through (column 5, line 47 through column 6, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize carbon steel in the construction of chamber having magnets therearound so that magnetic field more efficiently penetrate there through.

**Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjyo et al (US Patent No. 5,189,303) in view of Leung et al (US Patent No. 5,198,677) as applied to claim 7, and further in view of Anderson et al (US Patent No. 5,365,070).**

Tanjyo et al in view of Leung et al teach all limitations of the claims as discussed above except for the chamber is formed of low carbon steel.

Anderson et al teach an ion source 10 (Fig. 1) including a magnetic holding metal member 12 made of carbon steel which has high magnetic permeability so that magnetic field can easily penetrate there through (column 5, line 47 through column 6, line 2).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize carbon steel in the construction of chamber having magnets therearound so that magnetic field more efficiently penetrate there through.

**Claims 4-6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjyo et al (US Patent No. 5,189,303).**

Tanjyo et al teach all limitations of the claims as discussed above except for the plasma comprising at least 60% atomic oxygen ions; the value of the DC voltage; and the value of pressure of oxygen gas in the chamber.

It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

The particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not limit an apparatus claim, see *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte Thibault*, 64 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647. This rejection is based on the fact the apparatus structure taught

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above has the inherent capability of being used in the manner intended by the Applicant. When a rejection is based on the inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

**Claims 12-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjyo et al (US Patent No. 5,189,303) in view of Anderson et al (US Patent No. 5,365,070).**

Tanjyo et al teach all limitations of the claims as discussed above except for the plasma comprising at least 60% atomic oxygen ions; the value of the DC voltage; and the value of pressure of oxygen gas in the chamber.

It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

The particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not limit an apparatus claim, see *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte Thibault*, 64 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647. This rejection is based on the fact the apparatus structure taught

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above has the inherent capability of being used in the manner intended by the Applicant. When a rejection is based on the inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

**Claim 10 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjyo et al (US Patent No. 5,189,303) in view of Leung et al (US Patent No. 5,198,677) as applied to claim 7, and further in view of Mantei (US Patent No. 4,483,737).**

Tanjyo et al in view of Leung et al teach all limitations of the claims as discussed above except for the non-magnetic cooling jacket is formed of stainless steel.

Mantei teaches a plasma chamber 10 (Figs. 1, 2) including a filament 21 therein and having a plurality of magnets 14 surrounding the chamber wherein the plasma chamber 10 is made of a nonmagnetic material such as stainless steel (column 4, lines 29-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize nonmagnetic stainless steel as a suitable material for plasma chamber.

### ***Response to Arguments***

Applicants have argued that that the claim 1 limitation of "an array of filtration magnets positioned near the plasma source exit, and parallel to the plasma source exit plane, said array of filtration magnets separating the reaction chamber into an upstream region containing the confinement magnets and a down stream region" is not taught, disclosed or suggested in the Tanjyo patent.



As indicated in the previous office action, however, Tanjyo discloses an array of magnets 40 positioned near the exit of the plasma source chamber, and parallel with an exit plane of the plasma source exit. The Wein filter magnets of Tanjyo are magnets and they perform the function of filtering. Therefore they are an array of filtration magnets as recited in claim 1.

Regarding the limitation of "said array of filtration magnets separating the reaction chamber into an upstream region containing the confinement magnets and a downstream region", Tanjyo's apparatus comprises a body having a chamber formed therein, the chamber comprises a space where plasma is formed, and the Wein magnet array separates the chamber of Tanjyo's apparatus into an upstream region and a downstream region. Also, the upstream region contains the confinement magnets.

Applicants have argued that the Tanjyo patent does not specifically teach generating oxygen ions. As indicated in the previous office action, however, the particular type of gas used is a process limitation rather than an apparatus limitation. The recitation of oxygen ions in the preamble of claim 1 is therefore a recitation of intended use and the claimed apparatus is not so limited. The same is true of the recitation of diamond polishing in the preamble of claim 1. Diamond polishing is also a recitation of intended use and the claimed apparatus can be used for other purposes.

Applicants have argued that it is not taught, disclosed or suggested to implement the filament material, the magnet cooling mechanism and the liner taught by the Leung patent in the apparatus of the Tanjyo patent. Regarding the filament, Tanjyo teaches (col. 1, line 63) that the purpose of his heated filament is to emit electrons to form

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plasma, while Leung teaches (col. 4, lines 3-7) that a heated tungsten filament emits electrons sufficient to form plasma, which provides sufficient motivation to use a tungsten filament as Tanjyo's filament. Also, Leung teaches (col. 3, lines 24-29 and 57-60) that during operation an ion source becomes hot enough to require a cooling jacket for the confinement magnet and a high temperature resistant liner, which provides sufficient motivation to provide these elements in the apparatus of Tanjyo.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

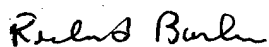
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvis Hassanzadeh can be reached on (571) 272-1435. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Richard Bueker  
Primary Examiner  
Art Unit 1763